

Piecewise Functions - NOTES

Date _____ Block _____

Evaluate the function for the given value of x.

$$f(x) = \begin{cases} 3, & \text{if } x \leq 0 \\ 2, & \text{if } x > 0 \end{cases}$$

$$g(x) = \begin{cases} x + 5, & \text{if } x \leq 3 \\ 2x - 1, & \text{if } x > 3 \end{cases}$$

$$h(x) = \begin{cases} \frac{1}{2}x - 4, & \text{if } x \leq -2 \\ 3 - 2x, & \text{if } x > -2 \end{cases}$$

1. $f(2) = 2$

2. $f(-4) = 3$

3. $f(0) = 3$

4. $f\left(\frac{1}{2}\right) = 2$

5. $g(7) = 2(7) - 1 = 13$

6. $g(0) = 0 + 5 = 5$

7. $g(-1) = -1 + 5 = 4$

8. $g(3) = 3 + 5 = 8$

9. $h(-4) = \frac{1}{2}(-4) - 4 = -6$

10. $h(-2) = \frac{1}{2}(-2) - 4 = -5$

11. $h(-1) = 3 - 2(-1) = 5$

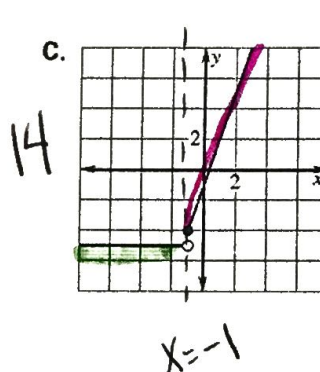
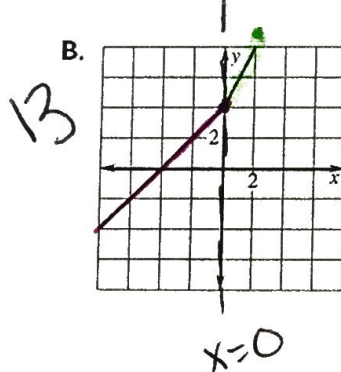
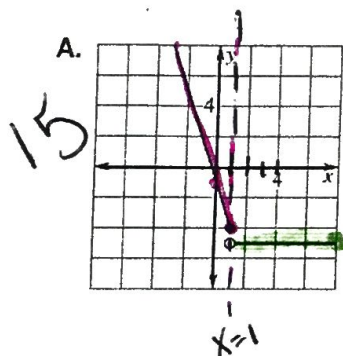
12. $h(6) = 3 - 2(6) = -9$

Match the piecewise function with its graph.

13. $f(x) = \begin{cases} x + 4, & \text{if } x \leq 0 \\ 2x + 4, & \text{if } x > 0 \end{cases}$

14. $f(x) = \begin{cases} 3x - 1, & \text{if } x \geq -1 \\ -5, & \text{if } x < -1 \end{cases}$

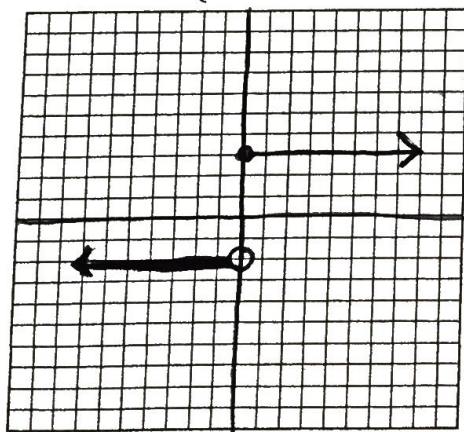
15. $f(x) = \begin{cases} -3x - 1, & \text{if } x \leq 1 \\ -5, & \text{if } x > 1 \end{cases}$



Graph the following piecewise functions.

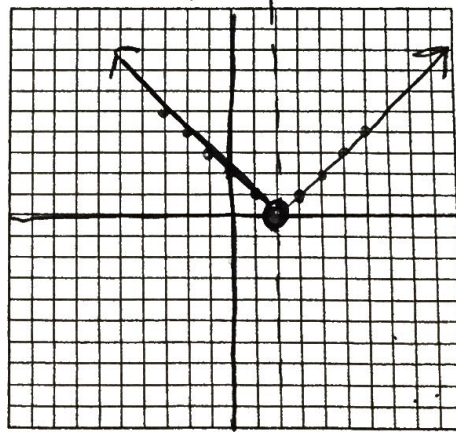
16. $f(x) = \begin{cases} -2, & x < 0 \\ 3, & x \geq 0 \end{cases}$

endpoint (0, -2) (0, 3)



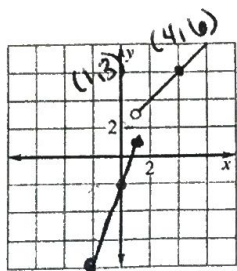
17. $g(x) = \begin{cases} -x + 2, & x < 2 \\ x - 2, & x \geq 2 \end{cases}$

left of 2 -2 + 2 = 0 (2, 0) (2, 0)



Write the equations for each piecewise function

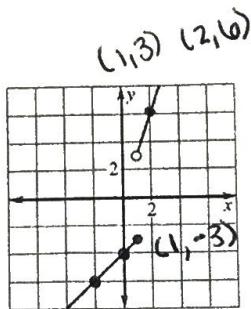
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$$f(x) = \begin{cases} 3x - 2 & \text{if } x \leq 1 \\ x + 2 & \text{if } x > 1 \end{cases}$$

$$\begin{array}{rcl} 3 & = & 1 + b \\ -1 & - & -1 \\ \hline b & = & -2 \end{array}$$

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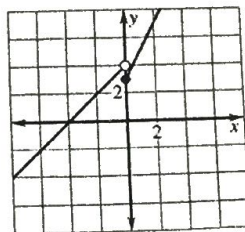


$$f(x) = \begin{cases} x - 4 & \text{if } x \leq 1 \\ 3x & \text{if } x > 1 \end{cases}$$

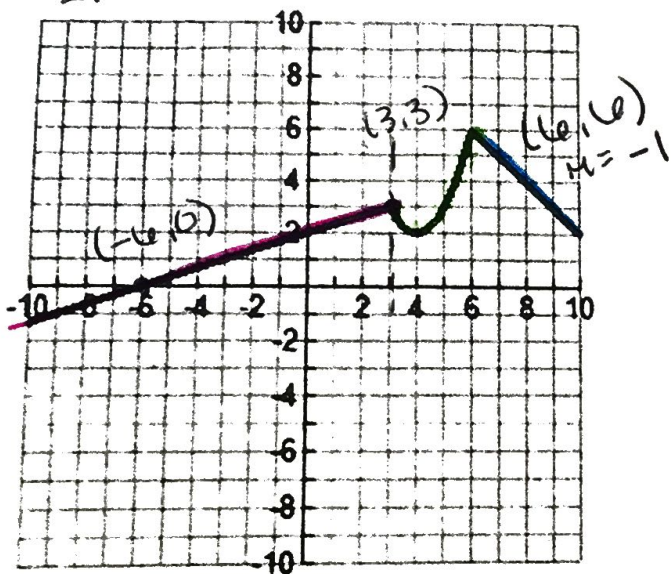
x	y
1	3
0	0
1	3

$y > -3$

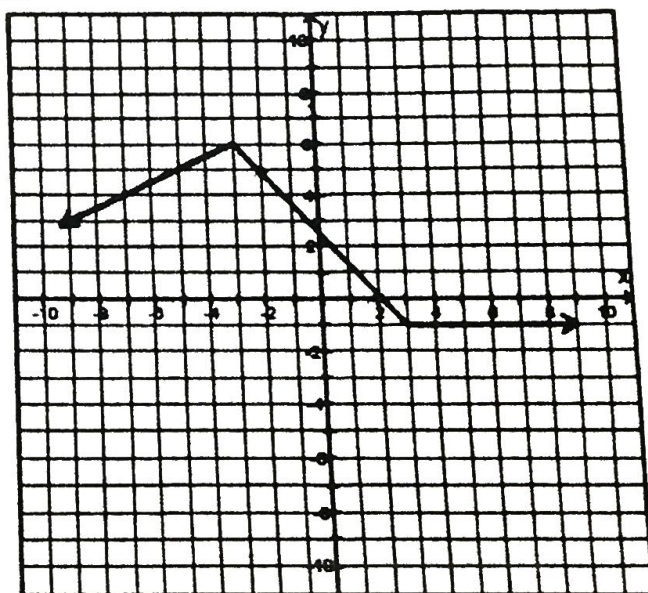
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$$f(x) = \begin{cases} \frac{1}{3}x + 2 & x \leq 3 \\ (x - 4)^2 + 2 & 3 \leq x \leq 6 \\ y - 6 = -(x - 6) & x \geq 6 \end{cases}$$